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An Investigation of the Effect of Resource Misclassification on some Accounting Indicators

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AN INVESTIGATION OF THE EFFECT OF RESOURCE MISCLASSIFICATION ON SOME ACCOUNTING INDICATORS

Traditionally, accountants have adhered to the convention that objects used together should be classified together. Assets and liabilities are partitioned according to the use for which an item is designed. Within each partitioning, a further partitioning takes place where items are clustered according to their degree of liquidity. Just as there is a definite dichotomization between balance sheet items, there is, at least in theory, a similar dichotomization between an asset and an expense depending on the extent of the service life and the use of the item. Accordingly, it is reasonable to assert that sometime in the early stages of accounting development, a general classification scheme of accounts has gradually developed and was generally accepted in its current format. It was then taught in schools and henceforth became an integral part of the training process of future accountants. The general classification scheme that accountants share has indeed been passed on to them from earlier generations of accountants through such precesses as teaching and indoctrination. With such training, the newly initiated accountants are necessarily influenced in approaching real life decision situations by the classification system they were taught, which eventually gets incorporated into their work and becomes an integral part of their accounting practices

in their dual role as providers and users of accounting information. As a result, accountants have accepted the scheme on faith without being cognizant of the impact or the significance of improper classification of any given object.

In current practice, whenever the classification of an item is in question, the dictum "when in doubt, disclose" is generally adopted.[1] Quite frequently, the yardstick which substantiates the doubt is based on a purely subjective basis and has been guided by a simple formula. This issue has become known as the problem of materiality. Thus, a misclassification of an asset or an expense is not subject to the disclosure requirements nor does it create any controversy in accounting theory if it is considered immaterial. But, accountants have not yet attained a consensus on the measurement of materiality.

The studies by Neumann,[2] Bernstein,[3] and Hicks[4] show that, in practice, an item may be considered material if it falls within the range of 5 to 10 percent of net income. On the other hand, Frishkoff[5] found that an item was found material if it is about 25% of net income, while Watts and Dopuch[6] chose to measure materiality by the effect of the change on the parameters of a time series model of income. Nevertheless, it can be said that in practice the materiality of an item is measured by its relation to

net income. Such a simple one-period index criterion was criticized on several grounds: (1) It ignores the income trend over time. (2) It violates the consistency convention and thus hinders comparability of income between periods since a change in income would change the materiality status of an item from one period to another.[7] (3) Finally, it ignores the economic circumstances peculiar to the firm, environment, or the nature of the decision situation.[8]

It is this last criticism that is of import in this study. For example, in relating an item to net income, no consideration is given to the effect of the length of the service life of the asset that has been misclassified as an expense. Nor has the rate of growth of the firm's economic activities has been considered in decisions made on materiality. Thus, with a high rate of growth, persistently misclassifying a fixed asset as an expense will completely alter the net income figure. Conversely, the longer the natural service life of the misclassified asset, the smaller the dollar amount of the misclassification. The reader should bear in mind that this result may be a product of the model used here. In either situation, the materiality base has changed and the simple index is no longer a reliable base. The effect of these economic situations on net income is not clear. Nor is the impact of the misclassification on various other measures such as

the rates of return.

The misclassification considered in this paper is the type that could result from adopting a policy of writing off some items as soon as they are acquired. In fact, some industrial firms maintain such a policy with respect to tools, dies, and small equipment of items below a certain cost level. Since these items have service lives extending beyond a single fiscal period, proper classification of these items would place them in the category of fixed assets. Thus, a cost of future income is being charged to the current period's income. In theory, these assets are considered misclassified.

Objectives:

The objective of this paper is to examine the effect of maintaining a policy of misclassifying a particular type of fixed assets (no matter how small) in relation to the growth in the firm's economic activities and the length of service life of the asset. Furthermore, this effect may be cyclical before it converges to a steady state in relation to the proper measure of income under generally accepted accounting principles. The significance of the misclassification will be evaluated in terms of its effect on net income as the major economic indicator produced by the accounting

process.

The Methodology:

The tool employed in this study is a simple simulation model. Since simulation can be utilized to isolate the research-relevant variables by counterfeiting reality, it is a useful tool for researching problems of complex situations which do not readily lend themselves to a complete analysis of all variables. This approach, however, does not go without cost as will be indicated later. Several accountants have used simulation in the recent past; but, the frequency of its utilization has been small.[9]

The Model and its Behavioral Properties:

The XYZ Inc., was simulated with several unique attributes. The balance sheet of XYZ consists of four major items: a constant cash balance of $100,000, recognized fixed assets, 1/3 of the resources is provided by long term liabilities which carries annual interest rate of 7%, and owners' equity represented by the balance of total resources (cash + recognized fixed assets - long term liabilities). All fixed assets with a service life from 2 to 7 years are not recognized as fixed assets and are charged off to the income statement in the same period of acquisition. The proportion

of these assets to total fixed assets was allowed to vary from 0.04 to 0.20. The initial period of the simulation consists of the first ten years. During that period, XYZ acquired fixed assets worth $100,000 a year. For the fifty years following the initial period, acquisition of recognized fixed assets was limited to the amount required to reach the level of needed capacity which is determined by the demand for the product. Demand in turn is a function of the growth rate in sales, which was chosen to be between 0.00 and + 0.20 of the previous period's sale. Accordingly, the model is dynamic. Supply of the product is determined by the ratio of output to gross investments in fixed assets (defined here as capacity) at the rate of 0.05. Output is priced at $10.00 a unit and prices are kept constant. Variable costs are determined at 67.95% of the selling price per unit which includes the per unit share of fixed assets' misclassification.

Since assets used in doing business that have service lives extending for more than a single fiscal period contribute to the generation of future income, the policy of charging off a fixed asset that has a service life greater than one year to the earnings of the acquisition period, such as that followed by XYZ, is considered a misclassification of fixed assets. This policy is accorded misclassification status irrespective of the size of the misclassified

assets, or of the longevity of service life. Further, since the first ten fiscal periods represent the initial conditions of the simulation, the effect of the misclassification is better detected in the fiscal periods following the initial conditions.

In formalizing the model, let "C" be the capacity in dollars, "t" be the growth rate in the firms sales, "S" be the sales in units, and "k" be the time in fiscal periods, then:

$$(1)\ C_k = (S_{k-1})\ (20)\ (1 + t),$$
$$= (C_{k-1})\ (1+t), \text{ where } C_{k-1} = C_k \ / \ (1+t).$$

Since the supply (or the volume of output) is determined by the demand, supply equals demand at all times, but at a constant price. In this model, therefore, we have simulated a situation parallel to the perfect competition case where demand is perfectly elastic, price is kept constant, and equilibrium is attained at the point of the intersection of supply and demand.

Define MC as the misclassified fixed assets written off in each period in dollars, mp as the proportion of MC to fixed assets and L as the service life of the misclassified fixed assets, then:

$$(2)\ MC_k = (C_{k-1})\ (t)\ (mp) + MC_{k-L}$$

That is, in any period, k, the dollar value of the misclassified fixed assets is equal to a proportion of the previous period's capacity plus the cost of replacing the retired assets that have been misclassified, given that these assets are being retired exactly in the L-th year from acquisition date.

It should be noted that we are interested only in two cases: whenever the growth rate t is equal to or greater than zero. This is simply because whenever $t < 0$, the firm will go bankrupt. Since $S_k = (S_{k-1})\ (1+t)$, where S is sales as before, then the $\lim_{t \to -\infty} S_k = 0$, and by the same token the limit of MC_k approaches zero. When the firm is due to vanish, the interest in the misclassified assets and materiality becomes an irrelevant issue.

When $t = 0$, the long run equilibrium position (i.e., removing the effects of the initial conditions) can be represented by a constant capacity and a constant amount of purchased misclassified fixed assets. These conditions are given by (3) and (4).

$$(3)\quad C_k = C_{k-1},$$

$$(4)\quad MC_k = MC_{k-1}.$$

Since the total amount of misclassified assets used during

period K is ((mp) C_k) and must have been purchased during the years K-L+1, K-L+2,....., K, we have

$$(5) \sum_{i=k-L+1}^{L} MC_i = (mp)\ C_k.$$

From (4) and (5), we obtain

(mp) C_k = (L) (MC_k), which implies

$$(6)\ MC_k = \frac{(mp)\ (C_k)}{L} = \frac{(mp)\ (20)\ (S_k)}{L}$$

Accordingly, when the trend in the growth of sales gets equal to (or very close to) zero, the dollar magnitude of misclassified assets becomes a function of (a) the prior period's sales, (b) the proportion of misclassified assets to total fixed assets, and (c) the productive life of the misclassified asset. As will be shown later, all these variables interact to produce the net effect of maintaining a policy of misclassification on net income before taxes.

Alternatively, when the demand for the firms output is increasing ($t > 0$), the long run equilibrium position (i.e., after removing the initial conditions) is developed as follows:

(7) $MC_k = (t)\ (mp)\ C_{k-1} + MC_{k-L}$

$= (t)\ (mp)\ C_{k-1} + (t)\ (mp)\ C_{k-L-1} + MC_{k-2L}$

or

(8) $MC_k = (t)\ (mp)\ (C_{k-1} + C_{k-L-1} + \ldots\ldots + C_{k-2L-1}) + MC_{k-iL-L}$

In general

(9) $MC_k = (t)\ (mp) \sum_{i=0}^{\infty} C_{k-iL-1} + \lim_{i\to\infty} MC_{k-iL-L}$

But since the $\lim_{i\to\infty} M_{k-iL-L} = 0$, (9) becomes

(10) $MC_k = (t)\ (mp) \sum_{i=0}^{\infty} C_{k-iL-1}.$

From (1), we have

$C_{k-L-1} = C_{k-1}/(1+t)^L$, or

(11) $C_{k-iL-1} = C_{k-1}/(1+t)^{iL}$

Substituting (11) in (10), we obtain

$MC_k = (t)\ (mp)\ C_{k-1} \sum_{i=0}^{\infty} 1/(1+t)^{iL}$, or

$MC_k = (t)\ (mp)\ C_{k-1}\ (1+1/(1+t)^L)$, giving (12);

(12) $MC_k = (t)\ (mp)\ (20)\ S_{k-1}\ (1+1/(1+t)^L)$.

As this result shows, the only added variable is the extent of the economic growth rate of the firm's sales and, subsequently, production capacity. Thus, $MC = \underset{\sim}{f}\ (t, L, mp, C)$.

From equations (6) and (12), it is apparent that whenever a firm maintains a policy of misclassification of some fixed assets, other things being equal, the dollar magnitude of this misclassificati-

increases with a higher rate of growth t, with a higher proportion of misclassified fixed assets to total fixed assets mp, with a higher productive capacity C, but with a lower productive life of the misclassified asset L. This behavioral property is of significance, especially whenever mp is being kept constant. For example, maintaining a policy of misclassifying some fixed assets that amount to only 1% of total fixed assets will amplify the dollar value of this 1% with the increase in growth trend (t), with the increase in demand (S), and/or with the decrease in the service lives of this 1% of fixed assets. The effect of the asset's service life may appear perplexing. But the shorter the service life of the asset, the more frequent are the retirement and replacement of that asset. This rather intuitive explanation is documented by equations (6) --where the division by the length of service life (L)--and (12)--where L is an exponent in the denominator. Both equations do clearly indicate that MC_k gets smaller for a larger value of L and vice versa. It remains then to observe the effect of this policy of misclassifications on net income before tax.

The Effect on Net Income:

Let GI be the net income before tax that is determined in accordance with generally accepted accounting principles (i.e.

whenever no misclassification is involved), MI be the net-income-before-tax determined according to the same principles modified by the XYZ policy of charging off some fixed assets. Under these designations, GI and MI for a given period differ only by the extent to which the policy of misclassifying fixed assets influence both: The expense account, and the amortization account. In any period, k, the expense account will be augmented by the acquisition cost of the misclassified assets, while the depreciation account will be diminished by the foregone depreciation charges. The net effect on income, therefore, will be:

$$(13)\quad \frac{1}{L}\sum_{i=k-L+1}^{k} MC_i - MC_k = GI_k - MI_k$$

$$(14)\quad MI_k = GI_k + \frac{1}{L}\sum_{i=k-L-1}^{k} MC_i - MC_k$$

But, since $C_k \geqslant C_{k-1}$ for any $t \geqslant 0$, then:

$$(15)\quad MC_k \geqslant \frac{1}{L}\sum_{i=k-L+1}^{k} MC_i \Longrightarrow MI_k \leqslant GI_k$$

In addition, $(MI_k - GI_k) = \underline{f}\ (t, mp, L, C)$ because MC_i was shown to be a function of all the four variables. By manipulating (12) and (13), we obtain (16):

$$(16)\quad MI_k - GI_k = (t)(mp)\left[1 + \frac{1}{(1+t)^L - 1}\right]\left(\frac{1}{L}\sum_{i=1}^{L}\frac{C_k}{(1+i)^i} - C_k\right).$$

and, thus, explicitly showing the functional form of the difference.

Under the assumption of Ceteris Paribus, the conclusion that $MI_k - GI_k \leqslant 0$ may not add much to the intuitive understanding of the effect of the misclassification. But, what has not been explicitly studied is the effect of the variation in each of the rate of growth, the productive life of the misclassified asset, and the level of demand for the product, which is the main objective of this paper.

The Behavior of Net Income:

It will be interesting to observe the bahavior of misclassified income in relation to GAAP income over time. For any given length of productive life of the misclassification asset (L), the retirement and replacement of this asset will take a cyclical pattern of L duration. Let K(0) refer to the first period of retiring and replacing an asset of productive life L. and ((1) be the second period, and so on until K (L-1). Then, from (10), we obtain:

$$(17)\quad MI_{k(0)} - GI_{k(0)} = \frac{1}{L}\quad MC_{k(0)} - MC_{k\ (0)},$$

and in K(s), for $0 < s < L$, we get:

$$(18) \qquad MI_{k(s)} - GI_{k(s)} = \frac{1}{L} MC_{k(0)} - 0 \ .$$

But since GI_k is also a function of demand, for $t \geq 0$, we have

$$GI_{k(s)} \geq GI_{k(s-1)}, \quad \text{and} \quad GI_{k(s)} + \frac{1}{L} MC_{k(0)} \geq GI_{k(s-1)} + \frac{1}{L} MC$$

$$\Longrightarrow \quad MI_{k(s)} \geq MI_{k(s-1)} \ .$$

Accordingly, the ratios of the two measures of income have the following relation:

$$(19) \qquad \frac{GI_{k(s)}}{MI_{k(s)}} \geq \frac{GI_{k(s-1)}}{MI_{k(s-1)}} \ .$$

The relationship (16) continues up to the year L-1. The transition from K(L-1) to K(0) may be derived from (13) through (1 as shown in (20):

$$(20) \qquad \frac{GI_{k(0)}}{MI_{k(0)}} < \frac{GI_{k(L-1)}}{MI_{k(L-1)}} \ .$$

When (18) and (19) are taken together, the ratio of net income before tax measured according to generally accepted accounting principles to the net income before tax measured under the XYZ policy of misclassification takes on a cyclical pattern with a duration of L years, a peak at K(L-1) and a trough at K(0), the replacement year.

Furthermore, for any $t > 0$, $GI_{k(s)} > GI_{k(s-1)}$, for $0 < s < L$ and $MI_{k(s)} > MI_{k(s-1)}$. Therefore, as the magnitude of each GI and MI increases, the ratio (MI-GI)/GI decreases and the cycle converges to a stable ratio of MI_k/GI_k. Let us define T_c to be

the fiscal period at which the cycle converges.

From (9), the period T_c is a function of the growth trend (t), the proportion of the misclassification (mp), and the productive life of the misclassified asset (L). In order to avoid possible further complication in presenting our analysis, the convergence period will not be solved for analytically, especially since this period was found to be over a half of a century. Rather, a simulation of the behavior of income under several selected values for t, mp, and L has shown several interesting results concerning the period T_c as shown in Table One.

Table One
Convergence Periods for Selected
Values of t, mp, and L.

mp	t	L	T_c	mp	t	L	T_c
0.04	0.05	2	125	0.08	0.05	2	135
		3	150			3	161
		4	150			4	162
		5	136			5	147
		6	156			6	164
		7	150			7	163
0.04	0.10	2	75	0.08	0.10	2	82
		3	80			3	86
		4	86			4	86
		5	86			5	87
		6	84			6	92
		7	90			7	93
0.04	0.15	2	60	0.08	0.15	2	67
		3	60			3	59
		4	60			4	62
		5	66			5	67
		6	66			6	62
		7	62			7	68
0.04	0.20	2	50	0.08	0.20	2	57
		3	50			3	51
		4	50			4	55
		5	56			5	57
		6	54			6	55
		7	55			7	58
0.16	.05	2	152	0.16	0.15	2	67
		3	175			3	68
		4	178			4	70
		5	161			5	75
		6	180			6	71
		7	180			7	75
0.16	0.10	2	92	0.16	0.20	2	52
		3	92			3	52
		4	94			4	58
		5	96			5	58
		6	98			6	58
		7	98			7	60

From the entries to this table, and from the previous analysis, the following results may be stated.

(1) For a given length of productive life of the misclassified asset, and for a given ratio of misclassification, the higher the growth rate of the firm, the faster the convergence.

(2) For a given growth rate, and for a given proportion of misclassified assets, the period of convergence does not seem to be very sensitive to the length of productive life of the misclassified asset.

(3) For a given length of productive life of the misclassified asset, and for a given rate of growth, the higher the proportion of the misclassified fixed assets, the longer the period of convergence of the ratio of the misclassified net income to the properly classified net income into a stable values.

It remains, then, to relate the effect of the change in income to the issue of materiality. As mentioned earlier, analysis of practice has revealed no consensus of what should be considered material. For any given measure, however, it is our goal to show that the ratio of the effect of the misclassification to GAAP income, i.e. $\frac{GI_k - MI_k}{GI_k}$, varies considerably with the rate of growth in the firm's economic activities, the length of the productive life of the misclassified asset, and the ratio of misclassified assets to total fixed assets.

Recall that we have two major points in time: (1) the period before convergence, and (2) the period of stable conditions after convergence. For the former period, it was demonstrated that the

effect of misclassification takes on a cyclical pattern. Therefore, it is the period of stationarity (when the effect of the initial conditions vanishes) that is of more concern at this point. It may be argued that convergence takes a considerable length of time and, therefore, is not relevant. But, we need not overemphasize that this was due to the setting of the initial conditions we chose for this simulation. It is entirely possible to conceive of another set of initial conditions with which the convergence period will be very short.

As shown in Table Two, the ratio of the effect of misclassification, defined as $RM = \frac{GI - MI}{GI}$ at period T_c, is influenced by all of the three parameters under study in this research; namely, the rate of growth, the length of the productive life of misclassified assets, and the proportion of the misclassification.

Table Two
The Effect of Misclassification as a Ratio of
Net Income Before Tax

t	mp	L	RM	t	mp	L	RM
0.05	0.04	2	0.01	0.05	0.12	2	0.03
		3	0.01			3	0.04
		4	0.01			4	0.04
		5	0.02			5	0.05
		6	0.02			6	0.05
		7	0.02			7	0.05
0.05	0.08	2	0.02	0.05	0.16	2	0.04
		3	0.03			3	0.05
		4	0.03			4	0.06
		5	0.03			5	0.06
		6	0.03			6	0.06
		7	0.03			7	0.07
0.05	0.20	2	0.05	0.10	0.16	2	0.08
		3	0.06			3	0.10
		4	0.07			4	0.11
		5	0.08			5	0.12
		6	0.08			6	0.11
		7	0.08			7	0.13
0.10	0.04	2	0.02	0.10	0.20	2	0.09
		3	0.03			3	0.12
		4	0.03			4	0.13
		5	0.03			5	0.14
		6	0.03			6	0.15
		7	0.03			7	0.15
0.10	0.08	2	0.03	0.15	0.04	2	0.02
		3	0.04			3	0.04
		4	0.05			4	0.04
		5	0.05			5	0.05
		6	0.06			6	0.05
		7	0.07			7	0.05

Continue Table Two

t	mp	L	RM	t	mp	L	RM
0.10	0.12	2	0.06	0.15	0.08	2	0.06
		3	0.07			3	0.07
		4	0.08			4	0.08
		5	0.09			5	0.09
		6	0.10			6	0.10
		7	0.10			7	0.10
0.15	0.12	2	0.08	0.20	0.08	2	0.07
		3	0.11			3	0.09
		4	0.12			4	0.11
		5	0.13			5	0.12
		6	0.14			6	0.13
		7	0.14			7	0.13
0.15	0.16	2	0.10	0.20	0.12	2	0.10
		3	0.14			3	0.14
		4	0.15			4	0.15
		5	0.17			5	0.17
		6	0.17			6	0.17
		7	0.18			7	0.18
0.15	0.20	2	0.13	0.20	0.16	2	0.13
		3	0.17			3	0.17
		4	0.18			4	0.19
		5	0.20			5	0.21
		6	0.21			6	0.22
		7	0.22			7	0.23
0.20	0.04	2	0.04	0.20	0.20	2	0.16
		3	0.05			3	0.21
		4	0.06			4	0.23
		5	0.06			5	0.25
		6	0.06			6	0.26
		7	0.07			7	0.27

Before proceeding further, a point of clarification is in order. From Table Two, it would appear as if the longer the life of the misclassified asset for a given growth rate and proportion of misclassification, the greater is the magnitude of RM. Should this be the case, the behavior of the model, which indicates that as L gets larger, MC and RM get smaller, will be contradicted. To resolve this apparent contradiction, the reader is reminded that for a given t and mp the convergence period T_c gets longer for a larger value of L. This can be verified upon inspection of the entries to Table One. Furthermore, since $t > 0$, and since $T_c(L) \geq T_c(L')$ for $L \geq L'$, then $GI(T_c(L)) \geq GI(T_c(L'))$, given the condition of this simulation. Accordingly, $RM(T_c(L)) \geq RM(T_c(L'))$ because of the effect of T_c which is a function of L. The life of the asset, however, is important during the cyclical effects before convergence.

At this point, the question arises: Is the ratio of the effect of misclassification on income (RM) material? It should be mentioned, however, that withholding judgment is only keeping in line with the objectives of this paper, namely, studying the effects of interaction of several variables on income. But by consulting the entries to Table Two, it appears that the effect of this interaction on net income before tax falls well within the ranges of materiality index advanced in the literature. For a misclassification proportion of 8%, for instance, we find that the effect on net income varies between 2% and 13% depending on the extent of growth rate and the length of the convergence period. /The reader is reminded that the length of the convergence period is also a

function of the initial conditions of the simulation. But this should not deter the generality of the proposition.7 By the same token, for a proportion of misclassification of 20%, the effect varies between 5% and 27% of net income before tax. According to the materiality literature, these effects are material, which only states our case; that is, although the misclassified fixed assets may constitute a small (constant) proportion of total fixed assets, maintaining a policy of misclassification will greatly effect net income due to the interaction of the growth of the firm's economic activities and the length of the life of the asset. According to the literature on materiality, therefore, given a certain level of economic activities, if 1% of fixed assets is misclassified, the effect on net income before tax may not be considered material; but, under another level, the 1% misclassification will be considered material. The result, of course, is a lack of comparability and consistency over time and/or over a range of economic activities. This will only dramatize the inadequacy of the index-of-net-income measures of materiality advanced in the literature.

Concluding Remarks:

By means of simulation and simple modeling, we have shown that some economic factors such as growth rate in the firm's economic activities do interact with managerial policies to create conditions that accountants rarely deal with. The particular situation chosen here was related to the effect of this type of interaction on net income whereby the inconsistency of the index-of-net-income materiality measures advanced in the accounting literature

has been clearly verified. We need not overemphasize that the importance of the conventional structure of the classification system in accounting is due to their subsequent treatments which influence the measurement of economic indicators representing the output of accounting. Accounting theorists, therefore, must get interested in the effects of other economic phenomena /such as growth rate/ on accounting output if and when other variables come into play. Perhaps, they should free themselves from concepts they used to adopt on faith so that they can tackle problems from a broader perspective.

In the simulation used for this paper, attempts have been made to minimize exogeneous variables so that attention may readily be focused on the relevant variables and that the behavior of net income can be predicted. For this reason, we don't claim a solution to the problem. In fact there are some limitations to our analysis: It is a rare situation for any firm to sustain a constant and stable rate of growth over a long period of time. It is also unusual to continue to employ the same sort of technology, which implies no possible change in the types of fixed assets employed and thus of the chances of misclassification. Furthermore, the retirements of fixed assets may be more abrupt and it should be interesting to notice that adding or abandoning a product line is not considered. In short, a host of limitations were necessary conditions in order to isolate the variables which we are interested in studying their behavior.

FOOTNOTES:

[1]See, for instance, Maurice Moonitz, Basic Postulates of Accounting (Accounting Research Studies #1; New York: The American Institute of Certified Public Accountants, 1961), p. 48.

[2]Fred Neumann, "The Auditing Standards of Consistency," Empirical Research in Accounting: Selected Studies, 1968, a supplement to Journal of Accounting Research, Vol. 6 (1968), pp. 1-17.

[3]L. A. Bernstein, "The Concept of Materiality," The Accounting Review, Vol. XLII, No. 1 (January, 1967), pp. 86-95.

[4]Ernst Hicks, "Materiality," Journal of Accounting Research, Vol. 2, No. 2 (Autumn, 1964), pp. 158-171.

[5]Paul Frishkoff, "An Empirical Investigation of the Concept of Materiality in Accounting," Empirical Research in Accounting Research: Selected Studies, 1970, a supplement to Journal of Accounting Research, Vol. 8 (1970), pp. 116-129.

[6]Ross Watts and Nicholas Dopuch, "Using Time Series Models to Assess the Significance of accounting Changes," Journal of Accounting Research, (Forthcoming).

[7]Eldon S. Hendricksen, Accounting Theory, Second Edition, (Homewood, Illinois: Richard D. Irwin, 1970), pp. 562-3.

[8]R. G. Peterson, "Materiality and the Economic Environment," The Accounting Review, Vol. XLII, No. 3, (October, 1967), p. 772.

FOOTNOTES (Continued)

[9]See for instance: Andrew McCosh, "Accounting Consistency-Key to Stockholder Information," The Accounting Review, Vol. XLII, No. 4 (October, 1967), pp. 693-700; John Simmons and Jack Gray, "An Investigation of the Effect of Differing Accounting Frameworks on the Prediction of Net Income," The Accounting Review, Vol. XLIV, No. 4 (October, 1969), pp. 757-776; and Melvin Greenball, "The Accuracy of Different Methods of Accounting for Earnings - A Simulation Approach," Journal of Accounting Research, Vol. 6, No. 1 (Spring, 1968), pp. 114-29.